Honors Algebra I

Name_____

Geometric Sequence Homework

Determine if the sequence is geometric. If it is, find the common ratio.

1) 1, 6, 36, 216, ...

$r = 6$

2) −1, −3, −9, −27, ...

$r = 3$

Given the formula for a geometric sequence, find the first five terms and the 8th term.

3) $a_n = 3 \cdot 3^{n-1}$

First Five Terms: 3, 9, 27, 81, 243
$a_8 = 6561$

4) $a_n = 2^{n-1}$

First Five Terms: 1, 2, 4, 8, 16
$a_8 = 128$

5) $a_n = -2 \cdot 3^{n-1}$

First Five Terms: −2, −6, −18, −54, −162
$a_8 = -4374$

6) $a_n = 2 \cdot (-4)^{n-1}$

First Five Terms: 2, −8, 32, −128, 512
$a_8 = -32768$

7) $a_n = 1.5 \cdot (-4)^{n-1}$

First Five Terms: 1.5, −6, 24, −96, 384
$a_8 = -24576$

8) $a_n = -3 \cdot (-2)^{n-1}$

First Five Terms: −3, 6, −12, 24, −48
$a_8 = 384$

Convert bewteen the explicit and recursive formulas.

9) $a_n = 2^{n-1}$ Common Ratio: $r = 2$
$a_8 = 128$
Recursive: $a_n = a_{n-1} \cdot 2$
$a_1 = 1$

10) $a_n = 3 \cdot 5^{n-1}$ Common Ratio: $r = 5$
$a_8 = 234375$
Recursive: $a_n = a_{n-1} \cdot 5$
$a_1 = 3$

11) $a_n = a_{n-1} \cdot -6$ Common Ratio: $r = -6$
$a_1 = 2$ $a_8 = -559872$
Explicit: $a_n = 2 \cdot (-6)^{n-1}$

12) $a_n = a_{n-1} \cdot 6$ Common Ratio: $r = 6$
$a_1 = 1$ $a_8 = 279936$
Explicit: $a_n = 6^{n-1}$

13) $a_n = 2 \cdot (-3)^{n-1}$ Common Ratio: $r = -3$
$a_8 = -4374$
Recursive: $a_n = a_{n-1} \cdot -3$
$a_1 = 2$

14) $a_n = 3 \cdot 4^{n-1}$ Common Ratio: $r = 4$
$a_8 = 49152$
Recursive: $a_n = a_{n-1} \cdot 4$
$a_1 = 3$

15) $a_n = a_{n-1} \cdot 4$ Common Ratio: $r = 4$
$a_1 = 2$ $a_8 = 32768$
Explicit: $a_n = 2 \cdot 4^{n-1}$

16) $a_n = a_{n-1} \cdot -6$ Common Ratio: $r = -6$
$a_1 = -3$ $a_8 = 839808$
Explicit: $a_n = -3 \cdot (-6)^{n-1}$